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Talk vs. Action:

A New Look at Same-Sex Friendships

From an Evolutionary Perspective

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Talk vs. Action: Using a Q-Sort to Study an Evolutionary View of Same-Sex Friendships

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Abstract

This study sought to find out whether there are differences between male and female same-sex friendships based on evolutionary theory. The researcher took a self-referent measure known as the Q-Sort. The Q-Sort was administered in a more "user-friendly" computer program instead of the traditional method. Significant differences were found between of female analogs being descriptive for female participants. However, there was no significant differences in analog preference for male participants' same-sex friendships. Female participants tended to have same-sex friends that had "feminine" traits, whereas male same-sex friends did not prefer masculine or feminine traits in friends. This means that female same-sex friendships tend to fit the evolutionary theory predictions whereas; males prefer same-sex friendships that have a mix of sex based characteristics.

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In Memory of Dr. William A. (Bill) Frederickson

(1934-2008)

Most people have had same-sex friends throughout their lives. Our everyday experiences demonstrate how friendships are ubiquitous. However, the way people behave and perceive friendships of the same-sex can be strikingly different. For example, to one person, a same-sex friend is someone who is very sociable, talks frequently about relationships, and is very intimate or close. In addition, this individual also appears to be "risk adverse" and prefers to cooperate rather than compete. Conversely, another person would rather have a same-sex friendship with someone who enjoys competition and taking risks. In addition, the latter individual prefers participating in active behaviors and yet be emotionally inhibited. Society traditionally tends to stereotype the former as being a female same-sex friend whereas; the latter example would fit a male same sex-friend stereotype. Back in 1972, Title IX of the Education amendments passed with the intent of eliminating sex discrimination in co-educational settings (Freeman, 2007). These stereotypes are very resistant to attempts socialize against these stereotypes (Russell & Tyler, 2002). Why do they persist despite attempts at socializing our children to be "gender neutral? Based on how persistent these stereotypes remain among many different groups (Maccoby, 1988), it seems likely that there is a combination of "nurture" and "nature" factors involved.

To highlight the importance of same-sex friendship, every known human society has same-sex friendships and so they should be viewed within a evolutionary context (Shirley & Campbell, 2000). Despite the fact that friendships are an invaluable part of human life, there is still little known about the ultimate reasons why friendships are in existence. According to evolutionary theory, there are sex differences in a variety of

relationships in our lives (Tooby & Cosmides, 1996). In general, friendships are not well understood from an ultimate function, which is an evolutionary standpoint. Robert Brain (Brain, 1976, as cited in Caldwell & Peplau, 1982, p. 721) stated, "Friendship must be taken as seriously as sex, aggression, and marriage." However, the public and even many psychologists tend only look at the "surface" or proximate motivations of friendship at the cost of understanding the ultimate causes. An understanding of friendship including a look at the deeper functions of friendship should be beneficial to society and to psychology as a science.

The existence of same-sex friendships in addition to how male same-sex friendships and female same-sex friendships differ from one another is most likely a universal phenomenon. Since universality, and how same-sex friendship vary between the two sexes in same-sex friendships appears universally, this points to an ultimate cause (Cosmides & Tooby, 1997). Unfortunately, there have been few studies conducted on the broad array of differences between male and female same-sex friendships from an evolutionary psychology perspective (Zarbatany, Conley, & Pepper, 2004). There have been researchers who have debated that same-sex friendships have are caused by and sustained through strong mental motivational forces (Baumeister & Somner, 1997). These forces persist throughout one's lifespan (Goodson, 2003). Baumeister and Somner (1997) argue that these motivating forces assist in making sure the organism can survive, guard, and compete for scarce food supplies and shelter.

Universality is further evidence in support of an evolutionary based phenomenon. Although there are overlapping functions of cross- and same-sex friendships, it is intuitive to believe that there are unique functions involved specifically with same-sex friendships.

One obvious difference is that same-sex friendships are not involved in direct mate pairing. However, indirectly same-sex friendships may still lead to a friend having more access to mates. In other words, those who have same-sex friendships would have a distinct and different sexual-fitness advantage over those who did not have any same-sex friends when it comes to “match making”. Although friendships may vary considerably on a proximal level, it seems quite reasonable to believe that they are involved in fulfilling certain ultimate needs on a universal scale.

The conceptual definition of friends, for the purpose of this study, will only include those individuals who are non-relatives and do not consist of sexual or sensual intimacy. In addition, according to MacDonald (1996), friendships also tend to differ from hierarchy (dominance/submissive) relationships. In addition, MacDonald discusses how a friend may pick from a number of people who differ in a range of areas. He goes on to state that decisions on who is going to be someone’s friend, relationship development depends on an individual's personal resources. These resources are theoretically limited by whether a friendship fulfills the desires of both individuals.

Therefore, according to MacDonald (1999), individuals "expect", at least on an unconscious level, that friendships will be more balanced regarding reciprocity largely more than those relationships, which are centered on dominance a hierarchy. He goes on to state his idea that friendship choice is a based on his apparent resources, which must match the desires of both individuals. Therefore, he theorized that these relationships are more balanced and rooted on reciprocity in interpersonal associations. According to MacDonald, this balance is mainly missing in those relationships that have a foundation

of exploitation and/or domination. In addition, he says that when compared to other non-kin relationships, it is less likely a person will leave the dyad.

Since someone can easily see proximal purposes of friendship, what is the function(s) of friendships in general? The study of evolutionary psychology was based on the idea that the "psyche" has intrinsic rules or programs similar to a computer program on an operating system (Cosmides, 1985). Cosmides argues that these learning rules make up direct behavioral emotive responses that, at least at one time, solved our adaptive problems. Cosmides and other evolutionary psychologists believe this occurred long before our modern existence. Tooby and Cosmides (2005) argue that friendships came from our ancestral background. In other words, they argue that these sex differences have been relatively continuous throughout human existence. More specifically, according to Cosmides and Tooby (1997), these sex differences began during what evolutionary psychologists call the human Environment of Evolutionary Adaptedness (EEA). Bereczkei (2000) asserts that the EEA is the period of time Homo sapiens spent 99% of their existence as hunter-gatherers.

Evolutionary psychology researchers tend to look at what it is about behavior that was adaptive during the EEA (Tooby & Cosmides, 2005). In other words, they believe behavior ultimately leads to survival and to successful gene transmission (reproduction) to the next generation. "The selection pressures of Pleistocene hunter-gatherer social life have brought about specific ways of thinking that were beneficial if not absolutely necessary to our ancestors for survival and reproduction (Bereczkei, 2000)."

It has already been well established that humans, those who took care of kin had greater fitness in what is known as kin selection According to Gould (1991), an

exaptation is taking something that had an original function and using this same trait to use for some other purpose. Friendship may be an exaptation of kin-selection. Those humans who had same-sex friends may have been more likely to have survived and reproduced during the EEA, especially on occasions when there would have been a lack of same-sex kin resources available for aid. The fact that Homo sapiens tend to be very social creatures, even outside the realm of kin, supports the notion that same-sex friendship may increase fitness (Tooby & Cosmides, 2005). Altruism goes beyond kin relations.

Friendships are argued to be "chosen" based on underlying causes, i.e. survival and sexual selection (Tooby & Cosmides, 1996). In support of human evolution impacting friendships in general, they pointed out that friendships should be something that falls under the umbrella of Evolutionary Psychology. Sex differences are a big part of evolutionary psychology theory, which by extension logically includes same-sex friendships (MacDonald, 1996).

The human brain consists of modules, which are also called "adaptive algorithms" or "Darwinian algorithms" that contain *a priori* knowledge about the structure of the world that surrounds us (Cosmides, 1985). Cosmides argued that having these pre-existing modules improve human fitness substantially. She mentions that the Darwinian algorithms are responsible for guiding particular behavioral traits, such as preferences in mate choice, rules of social exchange, and trajectories of development. Cosmides says that the evolved information-processing mechanisms of the human psychological architecture organize perception, thought, and action, into adaptively meaningful schema in contemporary humans. The function of these modules was to serve as a resolution to

long-lasting adaptive dilemmas. The modules cannot be accurately thought of as instincts but instead are more accurately defined as data crunching devices that gather ecological information and then convert that data into output behavior. This behavior then improves (or once improved) the human's inclusive fitness. In other words, the modules are what guide at least much if not most of our behavior. "There are many domains of human activity that should have Darwinian algorithms associated with them (Cosmides & Tooby 1987, p. 286)." Friendship is one example of relationships that Cosmides and Tooby mentioned should have a Darwinian algorithm. Since Darwinian algorithms are "molded" by the selection pressures which implies a potentially adaptive or exaptive value of friendships.

Just as the human tactile senses improved fitness in allowing our ancestors to survive and reproduce, the advanced structures of the brain allow us to be very adaptive. The sensory input an individual gathers affects when, to what extent, and how the modules are activated. This includes even same-sex friendship differences which most likely lead to improved fitness through use of the modules in behavior that are related to particular sensory input. These senses promoted behaviors that produce a type of reward and then an urge to maintain homeostasis in humans (Goodson, 2003). Goodson claims that otherwise, when a person's needs are not met, this creates an imbalance. He argues that this imbalance makes the person will feel as though something is wrong or one's homeostasis is off which leads to corrective behaviors. According to Goodson, emotions are therefore a type of signal about whether homeostasis is being maintained. For example, the existence of affect such as loneliness or lack of happiness that often accompanies the absence of friendship can be a compelling force to find an adaptive

solution. These unpleasant emotions reinforce friendships and survival by "encouraging" the individual to actively seek out friendships. In addition to the affect motivators of loneliness and unhappiness, the fear of being isolated probably plays a profound role in "encouraging" same-sex friendships. Since humans can be characterized as being driven by these emotions, one of the functions of friendship is that one is more likely to survive in the face of threats if one has friends for support (Baumeister & Leary, 1995).

There is indirect empirical support that those individuals who have a larger and stronger friendship network tend to be happier than those who are alone or have few friends (Diener & Seligman 2004). Feelings of happiness or emotional reward are also innate motivation mechanisms (Goodson, 2003). Goodson says that the module(s) elicit feelings of loneliness and happiness, which then encourage alliance building. By rewarding adaptive behaviors, it restored homeostasis in humans during the EEA (or at least evolved since the EEA) and beyond. The emotions help us sustain behavior that tends to be pro-fitness.

Interestingly, as an indirect consequence, happiness has been hypothesized to actually improve an individual's overall health that, in turn, leads to extending the lives of happier individuals (Seligman, 2002). This is also supported by research regarding potential medical problems for people with a low number or no close friends (Reisman, 1990). Therefore, one "being happy" results in an increased chance of a human genes' ongoing existence. Consequently, communicating effectively and being able to relate effectively with fellow humans is related to one's psychological well-being (Reis, 1984, as cited in Reisman, 1990). To summarize, sound mental health tends to be supported by

friendships. Consequently, what this means is a potentially longer life span and therefore a longer amount of time to reproduce (Seligman, 2002).

When social needs are met, this fulfills a psychological homeostasis (Goodson, 2003). Nevertheless, perfect overall organism homeostasis is never reached since there is always something about the individual that demands attention to enhance or to ensure survival. Of interest in this proposed study is that same-sex friendships have been found to be rewarding and enhance one's health (Reisman, 1990). Most likely, there are particular affect modules that are involved in promoting friendship behavior (Jones, 1999). If there was not a feeling of reward from friendships or negative affect associated with a lack of close acquaintances (loneliness), then one would probably have little, or at least less motivation to expend precious energy in order to form friendships. Creating and fostering friendships requires precious time and energy. So therefore, it would seem logical that friendships serve a function that justifies this use of precious energy.

The idea of Trivers' (1971) reciprocal altruism is another potential theoretical mechanism that may solve the problem of explaining the existence of friendships from an evolutionary perspective. Trivers uses reciprocal altruism to explain human behavior that on the outside would appear to hurt an individual's fitness. So based on Trivers' view, if one looks at same-sex friendship from an individual point-of-view, one can gain a better chance of survival if one were to be able to provide help for others. Trivers believes this is the usually implicit belief that the "friend" will return the favor (ultimate payoff). Otherwise, it would be a more effective strategy for the individual who cheats to gain the advantage by reaping benefits from those who help and with the cheater not returning the favor. Therefore, he claims that the cheater could benefit without any personal cost.

Nevertheless, according to Axelrod, 1984, as cited in Buss (2000) these cheaters will ultimately find fewer and fewer future social rewards since there will be fewer victims to prey on or "fall for" the cheater strategy. So therefore, cheaters will lose out in the end. This reciprocal behavior is also known as "tit-for-tat". Individuals are more likely to have improved fitness if they typically cooperate and have more to lose if they cheat since they risk losing access to vital resources. Kin selection and friendship, as long as it is promoted by reciprocal altruism, do not violate a basic tenet of evolutionary theory, which is according to McDonald (1996), "Thou shall not construct a theory which implies that organisms are truly altruistic." The reciprocal altruism theory by Trivers (1971) fits nicely into evolutionary theory since it does not violate the "non-altruism rule".

However, while reciprocity may one of the reasons why friendships exist, there is evidence that it is not the only ultimate explanation for friendships. Silk (2002) argues that reciprocity is not necessary and potentially even counterproductive for friendship development and maintenance in Homo sapiens. Silk also says that "Keeping tabs", so to speak, on the number of altruistic acts may even lessen the tab-keeping individual's friendship quality as perceived by the other member of the dyad. For example, Clark (1984) argues that friendships rise above a requirement for an equal pay back of loans or assistance, whereas relationships, which happen to be more distant, i.e. strangers, are governed by a more balanced tit-for-tat interactions and mentality. Silk (2002) argues that there are empirical findings from social psychologists, who repeatedly state that it is unnecessary for friendship to include simple tit-for-tat reciprocity. In one's network of close associates, which consist of close friends and immediate kin, individuals appear mainly concerned about the other person's well-being. Their assistance aimed at other

individuals is unconditional without an expectation for a particular debt to be repaid (Clark & Mills, as cited by Silk, 2002). Actually, those in collective relationships appear to conceal their particular assistance in shared tasks, resulting in an challenge for determination of debt and tit-for-tat reciprocity (Clark, 1984; Silk, 2002).

However, even though friends may try to conceal any detectable sign of reciprocity, this does not mean that reciprocity does not exist. For example, reciprocity may still occur on an unconscious level. Despite Clark & Mills' study as cited in Silk (2002), assertions that reciprocal altruism is not a process involved in friendship interactions, it is quite possible that at least an early friendship may include more reciprocal altruistic behavior, only for it to taper off as the relationship matures and trust is built.

Assuming that Trivers' (1971) reciprocal altruism is at least one of the main causal processes of friendships, one must be able to "know" if a perceived friend will be available when assistance is badly needed instead of just abandoning the individual. Therefore, it is adaptive to know if the relationships are "genuine friendships" rather than just being merely "fair-weather friendships". Consequently, the act of opening up to be a friend is a gamble since it utilizes one's energy and time to initiate and develop friendships. It is plausible that there may be a specific "fair weather friendship detector module" similar to the "cheater detector" (Tooby & Cosmides, 2005). Despite the inherent risk of being neglected by fair-weather friendships, those with no close kin nearby to provide assistance would be at a disadvantage if they could not find a friend that could help in comparison to those who succeed at creating and cultivating friendships.

In Zarbatany et al. (2004), they used several questionnaires that looked at communal and agentic aspects of personality, needs, and provisions of the university students' best friends and the degree of loneliness experienced. They found out the results showed friendships are molded by the dispositions which, revealed gender differences on agency and communion. Nevertheless, instruments that constrain the participants' freedom of response limit it more to the researcher's perspective rather than the participants' point-of-view. It also fails to look at how an evolutionary theory would predict these differences.

Baumeister and Sommer (1997) discussed differences in males and females. They discussed how men tended to prefer groups and women tended to prefer dyadic close relationships. Sex dissimilarities were seen in altruism, aggression, wanting to be unique, feelings of closeness, self-view and individual behavior. This article was only informational. It did not provide any ideas of a different way to study friendship. It also sounded atheoretical whereas, this study looks at an evolutionary background.

As mentioned earlier, most of the existing studies take a rather limited or proximal look at same-sex friendships while neglecting to look underneath the surface for the ultimate same-sex friendship functions; e.g., Maccoby (1988). Consequently, what is needed is to look at what are the ultimate functions of same-sex friendship since they are ubiquitous and yet elude an obvious ultimate explanation. The universal characteristics of same-sex friendships can begin in childhood and continue throughout adulthood (MacDonald, 1998), which points to an ultimate cause.

Not only are sex-roles in friendships universal, they are also resistant to social pressures. For example, there are evolutionary sex-role related obstacles faced by well-

meaning instructors and parents who actively discourage these pre-determined or evolutionary roles (Shirley & Campbell 2000). This observation adds more support to the notion that there is an evolutionary basis for preferring to have same-sex peers instead of opposite-sex peers. This logically progresses to the idea that this tendency to be drawn to same-sex peers may be present near the beginning of a child's existence. Of course, this does not dismiss the fact that the environment continues to be involved in human life (Baumeister & Leary, 1995). Evolutionary and learned environmental influences work in concert to produce behavior.

Even though same-sex differences are universal, this is not to say that these differences will not vary somewhat in their outward presentation. Salience across cultures does not preclude same-sex friendships from being affected by socialization just like any other evolutionary behavior. This behavioral variance is an example of the plasticity or range of human behavior. Nevertheless, in general terms, males and females tend to have same-sex friendship differences that appear to be universal (Archer, 1996; Low, 1989). In other words, evidently there are universal differences between male and female friendships that go beyond any simple environmental or social causation explanation (Maccoby, 1988).

Whiting and Edwards argued, (as cited in Shirley & Campbell, 2000, p. 11) that the minor proximal differences, despite the strength of same-sex collectives between different cultures, shows the characteristics of same-sex friendship choices that arise from non-genetic external factors. Therefore, since same-sex frequency and strength are similar throughout different cultures, it is reasonable to conclude that there must be a genetic/biological underpinning to these differences (MacDonald, 1996). Even in modern

western society, in which the differences between men and women have been "resisted" through socialization e.g., equal rights movements, these same-sex friendship differences tend to remain persistent and salient in today's world (Bourgeois & Perkins, 2003).

These observations that point towards an evolutionary cause raise a number of questions about what exactly the functions of same-sex friendships are. From a social psychology point of view, they may seem to serve as a so-called way of "fitting in" or not wanting to be a part of the "out group" (Baumeister & Leary (1995); Ainsworth, 1989). Most friendship literature has approached sex differences as simply being a byproduct of socialization, such as with the social role theory (Archer 1996; Deaux & Major 1987). Actually, social psychology has tried to explain why there are differences but unfortunately, most research has only gone as deep as proximal explanations (Maccoby, 1988). However, the idea of gravitating toward particular groups and away from rival groups can be better explained from an evolutionary point of view than a socialization view. Belonging to a group seems to be a human need (Baumeister & Leary, 1995). For example, being a part of the "in group", throughout at least part of our evolutionary history, has been a part of survival and fitness. The "in group" would not necessarily consist of just one's kin. They may have consisted of same-sex friendships as well. In the end, to truly understand why there are certain differences between men and women's friendships, one must delve deeper into the evolutionary underpinnings of behavioral differences in same-sex friendships.

The fact that there has at least been a failure, to some extent, in promoting sex neutral behavior even in young children begs the question - Why are these same-sex friendship differences so resistant to learning? Surprisingly, there is a scarcity of research

into close same-sex friendships from an evolutionary standpoint to answer that question. Unfortunately, most evolutionary psychology friendship literature has only focused on cross-sex friendship differences. The evolutionary theory based studies looked at cross-sex friendships as a resource of potential future mates based on sexual fitness and survival fitness (Kruger, 2001).

Even in the few evolutionary same-sex studies, the generalizability of the studies' findings tends to be limited. That is because much of the evolutionary theory based same-sex research has mainly focused on children (e.g., MacDonald, 1996). The remaining evolutionary friendship literature that does exist primarily looks at the research dilemma of how friendships in general could have evolved. Maybe this is because evolutionary scientists' face the dilemma of the lack of an obvious direct sexual fitness value from same-sex friendships or other ultimate explanation. Therefore, a satisfactory evolutionary explanation of same-sex friendships has remained elusive.

Now with the assumption that same-sex friendships are driven by fitness needs, an important question to ask is, "In what other ways do same-sex friendships have an effect on an individual's ability to pass on his or her genes?" It is logical to conclude that having same-sex friendships have served survival fitness. In addition, same-sex friendships indirectly improve sexual fitness. When it comes to survival, human male friendships have the theoretical ultimate explanation of assisting in hunting some types of prey. These are the prey, which are easier and safer to hunt in groups. In addition, the groups that had allies or coalitions of male allies would be more likely to conquer another human group, even without the advantage of enough kin allies, and survive.

If there is an evolutionary reason for same-sex friendships, there should be some type of criteria for one to choose friends to optimize fitness. MacDonald (1996) has a fascinating evolutionary based theory about same-sex friendship selection. He argues that similarity is a fundamental aspect of same-sex friendship. Therefore, he believes that from an evolutionary view, young Homo sapiens can be looked at as a set of potential resources for other young Homo sapiens. MacDonald (1996) proposes that reciprocation is the foundational concept underlying the sharing of idiosyncratic personal resources in same-sex friendships. Along these lines, children are predicted be pulled toward cohorts who are the most comparable to themselves over a broad assortment of characteristics. These characteristics are perceived as valuable commodities, which encourage relationships with peers who are similar, and individual dissimilarities regarding these characteristics comprise a valuable resource assortment for humans. In other words, a human's resource requirements are not necessarily limited to just what is tangible, direct, or obvious.

MacDonald (1996) also argues that if reciprocity is a basic rule of non-kin relationships, he suggests there must be a "phenotypic matching process", in which humans seek characteristics that are similar to their own. The more that the individuals are similar in various ways, the more likely one is to be involved in a friendship based on phenotypic comparability. Having similar characteristics to another individual is therefore a prelude to reciprocity. The reason for similar traits being related to a reciprocity or altruistic-like threshold is based on the resource worthiness of an individual's large variety of unique phenotypic characteristics. These characteristics are coordinated between the two peers. Therefore, if the level of attractiveness from a physical standpoint is a desirable resource, young humans who are perceived to be physically attractive are

then anticipated to have a greater tendency to develop a friendship with someone who is similar in perceived physical attraction. Theoretically, this is due to reciprocity involving a dyad in which each member has attained emotional and other resource reinforcement from the other friend. For example, a person's unique talents and areas of interest are predicted to be of value to other young individuals who convey comparable likes and dislikes as well as skills, e.g. taking part in a liking for something such as athletics. This gives both members of a dyad mental reinforcement, so that reciprocity continues to take place. This research proposal predicts an evolutionary view of human resource guided activity of female and male same sex-friendships.

Related to natural selection and sexual selection could be loosely referred to as a type of "friendship selection." Natural selection may have exapted from the already existing adaptation of maternal nurturance of offspring over to other types of relationships including friendships (MacDonald, 1998). In other words, same-sex friendships may be to some degree an exaptation instead of being caused by a specific module just for friendships, including same-sex friendships (Cosmides, 1985; p. 108). This idea has been proposed as the seeking of non-kin affiliative relations based on a certain set of traits (MacDonald, 1996). Being drawn to non-kin, who are phenotypically similar, may therefore just be a different manifestation (exaptation) of kin selection. The behaviors would be driven by kin selection-like "drives" since those who are kin tend to be the most similar (Lusk, MacDonald & Newman, 1998).

This would help explain the phenotypic matching process, which may be used by a member of a close same-sex friendship dyad to find the other member of what will make up the dyad and maintain these friendships (MacDonald, 1996). It is widely known

that people tend to want to be associated with those who are most like them. Survival chances are enhanced if one is able to find someone who can be depended upon. One may need some type of assurance about who can be relied upon (especially if they are not genetically related to the individual). Lusk et al. (1998) said:

> Since the proposed evolutionary function of similarity as a principle of human assortment is that of lowering the "threshold for altruism", genetic similarity theory proposes to be an extension of kin selection processes to unrelated individuals, and indeed the proposed mechanisms for detecting genetic similarity are the same mechanisms proposed as possible mechanisms underlying kin selection" (i.e., innate feature detectors, phenotypic matching, familiarity, and location). (p. 8)

To summarize, according to Lusk et al., the behavior of choosing someone who is most like themselves may involve a module that promotes maternal nurturance and/or kin selection-like behavior.

An important characteristic of a credible theory is that it must be falsifiable. MacDonald (1996) presents the credibility argument regarding his evolutionary theory based similarity/reciprocity theory of friendship. He backs this up by arguing how the theory is testable. In the case of friendships, he gives the example of situations that would typically take place if his evolutionary theory of same-sex friendship was false. A possible example appropriate for this study would be that same-sex friendships would have identical characteristics. Another finding that would go against evolutionary theory be supported if females would have same-sex friendships that match masculine characteristics and males would have feminine same-sex friends.

MacDonald (1996) asserts that a basic tenet of evolutionary theory is there is no such thing as "true" altruism. Therefore, he argues that his theory would be falsified if there were an existence of a significant number of instances in life, in which, bright,

verbally, interpersonally gifted, attractive, and physically fit children "chose" to be close friends with mentally, and physically disabled children. This would be against what evolutionary theory predicts since latter group of children would possess vastly different interests and abilities than the former "gifted" group. The relationships would be unbalanced and there would be very little to offer each other. MacDonald's (1996) phenotypic matching friendship theory would therefore be falsified under such circumstances in which the gifted individuals became good friends with a disabled child. This would be different from what is expected, which would result in being friends with similar peer group members who happened to be more like the gifted child. If this unintuitive friendship relationship were found to be true, it would be a substantial setback to the similarity/reciprocity evolutionary theory. The reason this finding would be problematic to MacDonald's (1996) theory is that if a gifted child "chose" to be best friends with someone who is severely disabled. This relationship could then be viewed as being an example of true altruistic behavior. The reason it would be considered altruistic is that the gifted child would apparently not be optimizing his or her fitness in his or her selection of friends. Another similar example of a potentially falsifiable finding regarding similarity/reciprocity evolutionary theory would be if it were discovered that there was a tendency to find that friends had an inclination to be more antagonistic than cooperative. This would be true especially if they were voluntarily taking part in highly discordant and/or manipulative relationships. This would be failing of a dyad member leaving a non-adaptive relationship, or even detrimental relationship. Therefore, since the gifted individual would incur a "cost", by not leaving the disabled person, it would be indicative of a form of altruism. In other words, in order to be consistent with modern evolutionary

theory, there must be some underlying ultimate cause besides altruism in the real since of the word. Besides a "gifted" person being best friends with a mentally and physically disabled person, manipulative and adverse relationships would present an additional challenge to the theory if children did not try to remove themselves from such a relationship. Obviously, this would be dissimilar to friendship since adverse interactions such as bullying, which are experienced as being highly undesirable by the unfortunate victims.

Along the previous lines of thought, in which a person is in an organized group situation has a lack of resources, the theory would not be supported if such an individual inside the peer groups did not to try to maximize his or her access to resources. For example, if individual participants decided to voluntarily give away valuable resources, without any personal benefit, it would prove to be a problem for the theory of evolution. Similarly, a sex-differentiated evolutionary theory of same-sex friendship would be falsifiable if it resulted with there being no significant differences found between a group of same-sex males' and same-sex females' behavior. People of the same-sex tend to have more similar traits than those of the opposite sex.

Another important aspect of MacDonald's (1996) friendship theory of evolution is that friendships will follow the ideas of similarity and reciprocity regardless of an individual's particular culture and any divergent socialization. Consequently, these evolutionarily consistent findings will not be significantly affected by various strong social trends. However, this is not to say that friendships are not affected at all by socialization contingencies. Nevertheless, to be theoretically sound as a theory that falls under the evolutionary "umbrella", the similarity and behavioral reciprocal findings

ultimately must indicate that there are innate panhuman facts regarding any dyad of "best friendships". It has also been argued by MacDonald (1996) that reciprocity is theoretically expected to be the fundamental rule of resource exchange in friendships.

Evolutionary theory predicts that children's best same-sex friendships will consist of peers who are the most similar to themselves on a wide variety of traits (MacDonald, 1996). These traits are viewed as resources by those involved in these particular peer relationships. In addition, the individual differences in these traits represent a diverse resource environment for children to find those who would prove to be adaptive or close to their own phenotypical characteristics (MacDonald, 1996). If what is predicted to hold true with children, it is certainly plausible that it will apply to humans of various ages.

A more expansive examination of same-sex friendships leads to at least a partial explanation of why there are a range of similarities within best same-sex friendships and a range of differences between same-sex dyads. Continuing with the maternal nurturance exaptation explanation of the origin of same-sex friendship, the similarity/reciprocity evolutionary theory is comprised of different individually adaptive systems (MacDonald 1996).

MacDonald (1996) discusses what he calls "the human affectional system" which is part of the adaptive system theory. MacDonald argues that the adaptive system is composed of three-parts in which this particular part leads to an urge for one to develop intimate, amiable associations throughout and after childhood. He says that the attachment part of the system's function is to elicit intimate friendship throughout adult life. It is also there to promote having and raising children. MacDonald states that the human affectional system is an exaptation of maternal nurturance.

Developing these close friendships requires a substantial investment of energy and time (MacDonald, 1992a). MacDonald (1996) believes that there is no real adaptive need for the pair bonding inclination to come from relationships that take place throughout one's early developmental stage of life. Instead, he believes friendships are a precursor to later intimate relationships. He goes on to discuss how stronger close human associations should emerge once an individual reaches puberty. For instance, same-sex friendships lead to competence at finding ways to successfully pair bond and eventually reproduce.

In summary, natural selection takes advantage of the opportunity to utilize a pre-existing system or has or an exapted system, which is already there at an early age (MacDonald, 1996). MacDonald claims this is the system alluded to earlier which has to do with maternal care of one's offspring. This could have led to the inclination for developing and maintaining various close human relationships, in particular, friendships very early in one's life. Evolution therefore takes what has been already developed and accessible which MacDonald (1998) accurately calls "opportunistic". If there are not any natural selective pressures countering a particular characteristic, which is not a fitness benefit during childhood, the most efficient course of action for activating a selected adult characteristic early (or at least a basic form) of the characteristic. This appears to be true despite the appearance that friendships lack any apparent advantageous childhood functions.

To give a broader overview, MacDonald's (1996) evolutionary theory based similarity/reciprocity friendship theory contains three main positions: (1) Similarity and reciprocity are anticipated to be a foundational way of how resources are "traded" in peer friendships; (2) Peer units can be seen as displaying an abundance of personal variances

(in his study among young humans). These individual differences are the result of environmental and genetic differences in evolved drives; (3) MacDonald argues that this background of personal characteristic variances makes up an array of resources for humans to match up with other humans' individual characteristics. Since similarity/reciprocity theory has support for being relevant at an early age in MacDonald's study, it is likely that this reality persists and quite possibly becomes even more pronounced as the individual grows.

Friendships can have an instrumental function, which would be especially helpful in times of dire need (Zarbatany, Conley & Pepper, 2004; Deci & Ryan, 2000; Hawley, 1999). Friendships seem even now to be adaptive, since people now tend to live further away from their family members than they would have in the past (Buss, 2000). Therefore, friends could help provide a substitute for social and instrumental resource needs in the absence of kin. Going back to an earlier concept, the Evolutionary Era of Adaptedness (EEA) was the period of time in which 99% of human development was predicted to occur. Written history supposedly makes up the other 1%. Even if same-sex friendships did not exist during the EEA, at least not to the same degree or in the same form, friendship behavior may have recently been exapted (MacDonald, 1996). Exaptation is the evolutionary opportunistic process of taking adaptive traits, such as brain modules, and using them for another purpose than they were originally evolved for. There is a controversy about whether evolutionary change ceased before or after the EEA or if it continues to play a part in contemporary humans (Hawks, Wang, Cochran, Harpending, & Moyzis 2007).

Cross-sex friendships are easier to explain from an evolutionary perspective, since they could have the potential as future mates whereas same-sex friendships do not. Cross-sex friendships have the potential to directly relate to sexual fitness. Same-sex friendships do not have the direct sexual-fitness connection. For example, males tend to see female friends as potential mates more frequently than females see their male friends as potential mates (Bleske-Rechek & Buss, 2001). That is true since female humans are limited by their reproductive physiology to usually being able to produce only one offspring at a time whereas; a male can impregnate several females within a short time to pass on his genes. Otherwise, a man from a woman's point-of-view may make a good friend but not meet her criteria of what makes a good lover to pass on her genes. Therefore, at least when it comes to mate selection, women prefer quality to quantity and males are more likely to be the reverse (Archer 1996).This can be explained by the fact that there are greater costs for women who fail to be more sexually selective. The preference for quality over quantity may be emulated in female same-sex friendships and the opposite in male same-sex friendships (Kuttler, Flam, La Greca, & Prinstein, 1999). Even without the sexual fitness need of cross-sex relationships, same-sex friendships could be affected by this "maternal nurturance" inclination, which lead women to have higher quality, i.e. more intimate, same-sex friendships than men (MacDonald, 1996).

Evolutionary theory, as far as humans are concerned, predicts dissimilarities between males and females . Factor rotations that show the highest differences between the sexes tend to be among the most fascinating findings for an evolutionary scientist, because we then possess a strong evolutionary based sex differences theory. The theory of evolution foresees that in species with differences in trends of parental commitment, the

sex with the higher degree of investment by the parent (usually females), is predicted to go for a lower risk tactic as compared to males. Conversely males, are expected to be more likely to tend to take risks, explore, and neophilia (Lusk, MacDonald, & Newman, 1998). This is due to one sex having a higher parental investment (typically females), in which the one who has to invest more is predicted to find it rather easy to mate. Human females are very constricted on how many offspring they can produce at one time and human males are not (Archer, 1996). Offspring investment is often much higher in human females. Therefore, successful mating is thought to be substantially more troublesome for the sex (typically human males) who invests the least in parenting. This results in males vying against other males for sexual access whereas it is much less problematic for females to find a mate (MacDonald, 1998). In addition, females are predicted and observed as being stronger on the scale of Nurturance/ Love of the circumplex model (Trapnell & Wiggins, 1996). "It is concluded that individual differences in these systems are important for understanding friendship and sociometric status in children's peer relationships (MacDonald, 1996)." The evolved sex difference in parental investment leads to differential behavior between the sexes, which are predicted to spill over to other parts of human nature including differences between how same-sex friendships work.

There has been some debate over the period of time same-sex friendships began to emerge among the human species (Cosmides & Tooby, 1987; MacDonald, 1998; Hawks et al. 2007). Although it is certainly plausible that same-sex friendships evolved during the EEA, perhaps the existence of same-sex friendships is actually a recent exaptation (MacDonald, 1996; Hawks et al. 2007). According to Hawks et al. (2007), the process of evolution has been known to be opportunistic and most likely does not just stop at any

one certain point in time since new environmental challenges present themselves. In other words, just because these changes may be incremental and very slow, that does not exclude the possibility of an ongoing human evolution due to modern selection pressures. Hawks et al. state that selection pressures that humans are exposed to may be just as much a reality of the modern era as they were throughout the EEA. The prevailing theory argues that the EEA, which is the amount of time that makes up 99% of human existence, may be the only time we evolved (Cosmides & Tooby, 1987). This debate about whether evolution still taking place in humans is relatively recent. An examination of this topic of controversy is beyond the scope of this paper.

In order to approach same-sex friendships from a traditional evolutionary approach, it is important to look at what was most likely adaptive during the Environment of Evolutionary Adaptiveness (Tooby & Cosmides, 2005). During the EEA, having close same-sex companionships could serve survival needs and lead to passing on an individual's genes' functions. Those who had more same-sex friendships may have been more likely to not only survive, but also have been given an added reproductive advantage over those without same-sex friends.

The role of males during the EEA was that of hunters. Therefore, building alliances with other males would be advantageous, at least with hunting some prey, over the males who were forced to hunt alone. Pleistocene era humans could learn the survival skills of how to effectively hunt and gather from each other. They could give social reinforcement for success and paradoxically serve as a friendly source of competition in order to improve their survival skills.

During the EEA, females are thought to have stayed around the couple's dwelling and domain. They were responsible for keeping the "home" organized and raising children. Women who were companions could have assisted their same-sex friends with child rearing. The other female friends could provide additional assistance when the available kin assistance was limited or non-existent. In other words, same-sex friends could have provided things the kin could not help with or chose not to do so.

Same-sex companionships could also assist each other in mate selection. An example of this would be "match-making", introducing a same-sex friend to a potential mate. Performing these non-kin functions would help explain why it was so important for humans to be skillful at socializing.

Modern men have been found, in previous studies, to prefer activities, behaviors that likely persisted throughout at least most of human history (Elkins & Peterson, 1993). Young human males are more likely to be involved in "rough and tumble" play which could have, and still does in some cases, helped prepare young males for hunting for food in the once they become adults (Shirley & Campbell, 2000). This could explain how male displays of aggression could be a signal to female humans the value of the male's genes in producing resources (food) for healthy offspring (Daly & Wilson, as cited in Shirley & Campbell, 2000, p.). According to Shirley and Campbell, a modern day example of aggression in males can also be seen in the young males who tend to prefer sporting activities, video games or toys laden with competition and even aggression whereas, young females tend to prefer collaborative video games or toys such as those that are about maintaining a household and raising children.

Hunting was much more physically strenuous in nature than childcare and maintaining the dwelling. Support for the adaptive differences of the sexes is seen in how men also typically have a larger physique. The fact that the vast majority of modern day hunters are overwhelmingly male seems to support this notion of separate acquired sex roles.

Modern day children tend to have toy preferences that match with traditionally male and female toys, even with the lack or limiting of social influence on toy selection (Shirley & Campbell, 2000). This could be adaptive in preparation for their role that they had during the EEA and beyond, i.e., with women being mainly involved in the child rearing whereas the males were involved in hunting and gathering. While it is true that women could learn and receive direct assistance from kin when it comes to childrearing and other tasks, perhaps friendships served as a "kin substitute." This would be especially true for those who only had few available kin or had no available kin. Since survival was very precarious during this period, the more contacts one had, the more likely one was to get support in order to survive and reproduce.

Some of the fundamental differences in male and female same-sex friendships can be explained by a three-part system suggested by MacDonald (1996). He found that women, when compared to men, preferred same-sex friendships that were higher on the intimacy/warmth dimension. This is what he says is a product of what he called the human affectional system (HAS). "Moreover, because of the relatively greater evolutionary importance of affectional relationships for females than for males, an evolutionary perspective predicts that intimacy will be more characteristic of girls' relationships than those of boys (MacDonald, 1992a)." Therefore, MacDonald argues that

similar to how activities may be in part derived from male-male competition in males, intimacy may be derived from the tendency to be more intimate in same-sex friendships.

The mental portion of what adapts to the evolutionary problem of defending oneself when there is the presence of danger or a perceived threat MacDonald (1996) called the behavioral inhibition system (BIS). Panksepp's, as cited in MacDonald (1996), fear-anxiety system in what is presented as a physiological system which reacts to risk appraisal with an activity inhibition and the start of fight or flight actions. The emotions related BIS are worry, nervousness, and stress.

Conversely, most males were found to be higher on sensation seeking and impulsivity than most females (MacDonald, 1996). Women tend to be more behaviorally inhibited than men are. From an evolutionary standpoint, this is because females have more to lose from risky behavior, such as not being there to raise their offspring (MacDonald, 1996). One reason males exhibit riskier behavior is to improve their sexual access to females as mates vs. rival males. The tendency to exhibit riskier behavior most likely permeates who they are as a human being beyond competing for a mate. This includes same-sex friendships.

Those with a developmental perspective (e.g. Kagan, Reznick & Snidman, as cited in MacDonald, 1996, p.) have heavily researched this system. The theory of evolution leads one to believe the developmental support suggesting that females have a greater tendency toward behavioral inhibition than males (MacDonald, 1996). While the undesirable feelings are experienced as negative, these emotions serve an adaptive function of the female staying within the vicinity of her male mate for protection. Otherwise, the female would remain near several other females within her territory.

Male-male friendships vary from female-female friendships regarding frequency and duration of conversations and emotional openness (Wright & Scanlon, 1991). Women are more likely than men to emphasize talking and affective sharing (Caldwell & Peplau, 1982). Instead, males were more likely to emphasize the action of doing things together, whether it is actually partaking in them or discussing them (Caldwell & Peplau, 1982). Females tend to be more self-disclosing than males, although males would like to feel closer in these friendships (Reisman, 1990).

Inexpressiveness in males, according to Archer (1996) is an underpinning of many vital sex differences, including inexpressiveness in male same-sex friendship. He said the inexpressiveness of males could be seen as coming from male-to-male competition as opposed to just a simple socialized division of labor. Even the level or type of socialization is at least partially product of evolution (Archer, 1996).

It is important for males to not appear vulnerable in a masculine environment that tends to emphasize the masculine qualities of reputation and strength. To reveal a "vulnerable" affect could potentially expose a male to being exploited or even ostracized by other males. Cross-culturally there are patterns of socialization (e.g., Low, 1989) that show the universality of masculine social atmospheres for younger and older males. Seen from this point-of-view, several of female social traits, including more same-sex friendship self-disclosure, more dealing with grief from a loss-oriented way, and higher vulnerability styles of attachment, indicate greater expressiveness. Higher intimacy tends to be related to higher friendship satisfaction (Bank & Hansford, 2000; Reisman, 1990). Nevertheless, male intimacy is higher in cross-sex relationships more than in same-sex

friendships (Reisman, 1990), which evidently may be less threatening to the male since there is the lack of male-male competition in cross-sex friendships.

Males tend to recognize the value of closeness and even desire it in same-sex friendships and yet fail to exhibit closeness. Therefore, even though males' desire greater intimacy with their same-sex friends, according to Fehr cited in Reis, Senchak, & Solomon (1985) they somehow "decide" not to be open with the same-sex. Perhaps, the majority of males are less capable of intimacy. More precisely, males may think they are consciously deciding to be less open. Instead, the ultimate cause of fitness pressures is the actual "decision maker" fitness factor.

To get a better idea of the intimacy differences between male and female same-sex friendships, apparently females have higher scores than males on the element of intimacy or affection by 0.5 standard deviations (MacDonald, 1996). A particular regular observation in the male/female sex disparity research regarding peers is that females have a greater tendency to gravitate to a comparatively small quantity of relationships with a foundation of warmth and intimacy (Berndt, as cited in MacDonald, 1996; Buhrmester & Furman, 1987). Conversely, males have a greater tendency to participate in wide-ranging social relationships, which tend to not be as close as female social relationships (MacDonald, 1996; Buhrmester & Furman, 1987).

As far as the same-sex friendship theory of resources, which was explained earlier in this proposal, the argument that has been presented is that females put greater emphasis into relationships that are close to a greater extent than males. Therefore, closeness and affection materialize as being less highly valued characteristics of friendship for males more than females (Benenson & Christakos, 2003). Although there is literature supporting

a difference in intimacy importance in same-sex friendships (Benenson & Christakos, 2003), that does not take away from the fact it is still valued in both sexes Fehr cited in Reis, Senchak, & Solomon (1985).

There are considerable differences between males and females in communication styles and social interactions (Maccoby, 1990). Females may be more attentive to social status cues and choose their friends based on social status more than males; this is seen as early as in children (George & Hartmann, 1996). Males are more likely to base status on a domination hierarchy.

Similar to how age affects friendship perceptions (Blieszner & Adams, as cited in Fehr, 2004), genetic and structural reasons for how sex affects these perceptions can be presented. Case in point, Wright (1982) gave the description of male friendships as being more "side-to-side" whereas female friendships were described as being "face-to-face". This illustrates how females have a greater inclination to exchange experiences involving affect, whereas males are more likely to be involved in activities with their friends. When male same-sex friends do talk, it typically does not involve much expression of affect. It is conceivable that females are presented with a greater number of chances to create and sustain friendships that are more emotionally intimate than males are.

Genetic/biological reasons for these differences regarding intimacy are comparably likely. Maybe because of intrinsic mental tendencies and differences in how males and females are socialized, women may have a greater tendency to create affect rich intimate relationships than males do. Apparently, there is an inclination of females to be more proficient at putting how they feel into words, which may result in them putting greater emphasis on the emotional characteristics of friendships in how they define same-

sex friendships. Conversely, the inclination of males to interact in activities among themselves could possibly result in them stressing how much time they expend with each other along with other alternative gauges of interactive activities.

The varying ultimate needs of males and females lead to an array of social and structural differences between the sexes as a whole. This may result in a broad scope of disparities in male-female same-sex friendship interactions and therefore leading their differing friendship "world views" (Wright, 1982). "Men and boys rely on their close male friends to help increase their social prominence more than do their female counterparts, but interestingly; they do not do so at the expense of friendship closeness. Male participants desire (but do not always receive) both agentic and communal support from their close male friends (Zarbatany, L., et al., 2004)."

Since too much competitiveness is generally seen as a sign of a low quality friendships (Zarbatany, et al., 2004), a vital undertaking for future scholars would be to document the manner that social dominance and intimacy requirements are balanced in strong male same-sex friendships. One example is the thrill that is part of competition. This "rush" can elicit positive emotions that solidify the friendship. This is particularly true if the competition is on an equal level with each friend with each friend alternating when it comes to the victorious position. In addition, a friend may vicariously enjoy their friend's accomplishments, particularly when these accomplishments are not costly to the observing individual (Zarbatany, et al., 2004). Conversely, battles for dominance among male individuals, or jealousy about the other's achievements, may result in discord and ultimately affective distance, which are typically seen in low quality friendships (Parker & Asher, 1993).

Nevertheless, the challenge of rivalry is not unique to just male same-sex friendships. Similar challenges present themselves among female same-sex friends. For instance, intimate female same-sex friends are sometimes left behind when one's actions or status undercuts the other friends' image they want to portray or their popularity is jeopardized. It has been suggested that males have more chances to combine communal and agentic wishes than the opposite sex because of the tendency of the male sex in stressing hierarchal goals (Zarbatany, et al., 2004). Comprehending these means of integration could shed light on the seemingly larger stability of male friendships when compared to female friendships (Benenson & Christakos, 2003).

Animal studies, especially those of non-human primates, can be invaluable as a source of evidence for evolutionary behavior in humans. For example, comparable behavioral findings to human friendships are seen with common chimpanzees (Geary & Flinn, 2002). Geary and Flinn mention how male chimpanzees are less involved with their offspring than female chimpanzees. Female chimpanzees are also closer to others that are related in their communities than those that are not related when they are compared to male chimpanzees. In addition, female chimpanzees dedicate a smaller amount of time than males do with same-sex chimpanzees that are not related (Benenson & Christakos, 2003). Benenson and Christakos state that as a result, if a dispute emerges, female chimps will be less dedicated to finding a solution with same-sex non-relative associates than they are with their relatives. Nevertheless, as far as Homo sapiens studies are concerned, there has been a lack of studies comparing males and females in their overall degree of dedication to associations with cohorts of the same-sex. For example, it is plausible that human females could be more dedicated than human males regarding same-sex and

family relations than female chimpanzees. More studies of the ultimate causes for differences between strong same-sex friendships are essential before the understanding of sex dissimilarities of these associations can move forward. Therefore, this study aims to expand our knowledge and understanding of same-sex friendship differences.

A plausible reason for the problems involved in female same-sex friendships that lead to friendship dissolution may be that females may have a deficiency when it comes to a skill for resolving conflicts (Lever, 1978). Evidently, this potential difficulty in solving conflicts has been observed in female chimps noticeably more frequently than male chimps (Benenson & Christakos, 2003). When there is an observable conflict in a female chimp dyad, there is greater likelihood of the female dyad using a greater amount of time finding a resolution between two kin than using time and energy looking for a resolution with their unrelated same-sex associates.

This strategy may not be true when it involves human females regarding their own overall degree of commitment towards their close relatives instead of non-related group members. It is possible that female Homo sapiens exhibit more dedication to both kinds of associations than Homo sapiens males. However, as far as there being a stronger skill in finding a resolution to male-male conflicts as seen in bonobos, this idea of skill difference is not conclusive (Benenson & Christakos, 2003). Accordingly, it is wise not automatically assume that there exists an evolutionary cause of dissimilarities between the sexes in their ability to resolve disputes, based on this single species' evidence. Benenson and Christakos mention this is because both bonobos and chimps are equally evolutionarily related to Homo sapiens. There is therefore a need for more studies in the

dispute-resolution ability area. Currently, Benenson and Christakos claim that this level of closeness is backed up experimentally by genetic and morphological evidence.

These non-human primate and Homo sapiens findings (Benenson & Christakos, 2003) are still supportive of an evolutionary notion of same-sex friendships. In theory, it would be selected for the female to be more affectively attached to others. By having a tendency to be affectively close, human females would remain close to those who are kin in order to help improve their chances for survival. By remaining near kin (and those non-kin who have similar phenotypical traits) and by assisting in taking care of their offspring throughout the EEA, their offspring survived to reproduce. When it comes to the male Homo sapiens lack of emotional closeness, close associations with other males and close physical proximity to hunting associates would be more likely characteristics necessary for their survival. These individuals would be those who were capable of providing assistance to their own and cohorts continued existence. They could help each other in providing sustenance to their respective offspring. Similar results have been observed with common chimpanzees. However, Benenson and Christakos state that this is not the case when it comes to bonobos. Evidently, Benenson and Christakos argue that as far as common chimps are concerned, females commit a larger amount of their time to others who are family members than those of no relation when compared to their male counterparts.

Taken as a whole, these characteristics display an expected same-sex friendship differential pattern, predicted best by evolutionary theory. To be more specific, sexual selection is even related to the nature of same-sex friendships. For example, the female sex is predicted to be the low-risk and high investment sexes in which in comparison to

males, to be comparatively less of a seeker of sexual variety, and females have less to gain by aggression and dominance. The theory of evolution puts an emphasis on the concept that the large investment sex (females) will be sought by the low investment sex (males) (MacDonald, 1996). This leads to almost all females having a high probability to mate and reproduce. Conversely, for most of mammalian species, mating for males is a substantially greater challenge than it is for females. Females are therefore anticipated to be comparatively less likely to be risk-takers and act on impulse. Males though are known to be more attracted to reinforcement, to be more aggressive, and more worried about their level on the group male hierarchy. This is in comparison to female-female nonsexual and non-kin relationships.

As stated at the beginning of this proposal, looking at same-sex friendships from a mere proximal view is inadequate in actually explaining why same-sex friendships are different. Therefore, this study will go beyond the typically more obvious proximal reasons for friendships. Rather, the author will seek to elucidate the evolutionary underpinnings of same-sex friendship, specifically in how they differ between males and females in same-sex friendships.

Unique sexual selection pressures apparently led to differential male and female same-sex friendships' origins from either exapting an existing module or same-sex friendships may have their own module. In other words, male same-sex friendships and female same-sex friendships differences exist because of selection pressures may have led to differing modules that increased the individual's probability of survival. This study will aim to support MacDonald's (1996) similarity/reciprocity evolutionary theory of friendships.

To adequately find the same-sex friendship differences that are predicted to exist, an appropriate measurement is necessary. Through operant subjectivity, derived from the use of a unique computer Q-sort program (Thomas & Watson, 2002), it is predicted that support for evolutionary psychology being as being unifying paradigm (Buss & Reeve, 2003), will demonstrate significant differences between male and female same-sex heterosexual friendships.

Method

Participants

The number of participants consisted of 27 male college students and 34 female (N = 61) college undergraduate students taken from the Fall 2008 campus psychology pool at a Midwestern university (University of Central Oklahoma). By taking part in the experiment, the participants satisfied an introductory psychology undergraduate class requirement. In compliance with the standards of ethics set up by the American Psychological Association (American Psychological Association [APA], 2001), participants were informed, by a written consent form about what the experiment consists of. Whatever they disclosed in this study will be kept completely confidential. The only exception would be if there would have been an appropriate reason (danger to self or others) to disclose confidential information to the proper authorities. In addition, the participants were informed that they are free to end their participation at any time and for any reason. All participants were required to read and give their signature on an informed consent form in order to participate. Each participant received an online-administered credit through the Sona Research Participation System. When the FlashQ program failed,

the participant at that workstation was thanked for his or her participation, promised credit for attending, and then sent on his/her way.

The demographics of the participants were as follows. Ninety-three percent (N = 57) of the participants were between the ages of 18 to 24. The remaining participants included 2 between the ages of 26 to 35, and the remaining 2 were 36 to 34 years of age. When it came to the participants classification, 59% (N = 36) were freshmen, 26% (N = 16) were sophomores, 9.8% (N = 6) were juniors, and 3.3% (N = 2) were seniors. One participant answered "other". Finally, as far as marital status goes, the vast majority were unsurprisingly single at 95% (N = 58).

Some of the descriptive questions focused on the individual's personal friendships more closely. For example, 90% (N = 55) had at least one same-sex friendship. In fact, most participants said they had more than 72% (N = 44) had more than 10 same-sex friends. When it came to the number of friendships over a lifetime the previous finding since almost 70% (N = 42) claimed they did not have a lifelong friend whereas about 25 percent (N = 16) had 1 to 5 lifelong same-sex friends.

The next interesting part of this study was about the descriptive information about their sexual orientation. Sexual orientation was definitely interesting as only about 80% (N = 49) of the respondents classified their sexual orientation as "heterosexual". Of the remaining participants, 4.9% (N = 3) declared themselves as having a "bi-sexual sexual orientation, 3.3% (N= 2) declared themselves as be a gay male or lesbian, and there was one participant who was "unsure". Despite the anonymity, there were almost 10% (N = 6) who declined to answer. The ramifications of these responses will be discussed later.

Several participants were excluded from the study. Many of the participants that were scheduled did not attend one of the sessions. The remaining participants that were not included were excluded because of a FlashQ computer error. The cause of this error is unknown and appeared to occur at random. However, since there was not an increased likelihood of this error occurring to any particular participant individual characteristic is probably minimal. Lack of computer knowledge by the participant and/or as a possible reason must be considered for this lost data. However, this is highly unlikely since the error typically occurred at the end of the process. Each participant who was excluded was thanked and given credit for attending the experiment.

Design

The Q-sort technique was chosen for use in this study because of the apparent void of studies involving same-sex friendships from an evolutionary perspective. Most same-sex friendship studies only study same-sex friendships differences from a social psychology standpoint such as social role theory (Archer, 1996) rather than using instruments that are more restrictive.

Q-sort analysis can be daunting by even an experienced researcher. By simplifying the analysis process, without damaging the credibility of Q-sort research findings, the research will use the PQ Method (Schmolck, 2008). According to Schmolck, he tested the PQMethod was tested for statistical accuracy against the same analyses performed through SPSS. In this particular study, there were two forced factors, which were matched up with a 2 X 2 matrix of participant sex (male X female) vs. same-sex friendship preference (masculine type vs. feminine type). This way of finding relationships should be a substantially more extensive and useful method than a simple likert-scale type

measurement. The greater measurable level of preference occurs since a ranking is naturally produced as the variables are selected, because of the reality that as the numbers grow larger they are linked with the strategy chosen. Therefore, every chosen variable then obtains a variation measured by strength of the same-sex preferences.

The independent variable was sex of the participant. The statements were designed in a way that that the respondent will theoretically transfer their particular preferences of traditionally masculine and traditionally feminine same-sex friendships. This is similar to the self-reference quandary dealt with by Knight, Frederickson, and Martin (1987) as cited by Mather & Knight (2007). The same-sex friendship stimuli, in this proposed study, were chosen based on evolutionary theory.

Materials

When it comes to studies that are about both differences between same-sex friendships from an evolutionary psychology perspective, they are very scarce. They are even rarer when it comes to examining them by using such a unique instrument as the Q-sort (Stephenson, as cited in Thomas & Watson 2002). This study will use a variety of different evolutionary theory based sex specific "characteristics" of male and female same-sex friendships instead of simply just studying one or two characteristics or choices. This is necessary to get a better overall view of what the sex differences exist from a broad perspective while remaining as parsimonious as possible.

In the implementation of the actual experiment, a Q-sort (Stephenson, as cited in Thomas & Watson, 2002), with an appropriate set of instructions and statements were utilized. The Q-sort is a type of subjective instrument. The Q-sort technique has been found to be an extremely useful instrument in determining the subjective self-referent

views of people by quasi-experimental means. The Q-sort, which will be given to all participants, was developed to test the characteristics of close or best same-sex friendships.

One of the reasons the Q-sort (Stephenson, as cited in Thomas & Watson, 2002) was chosen, is it should prove to be an appropriate and an effective way to approach looking at ideal same-sex-friendship differences. Instead of using an instrument that simply dictates a very small range of options, the Q-sort is based on how a participant would define their ideal same-sex friendships. This is conducted by allowing a much broader range of possible responses when compared to something like a simple likert-type questionnaire. By having a broader range of choice yet, still being a reasonably limited instrument. A range of items allows broad latitude in the participants' options. This shows how the Q-sort adds the crucial element of subjectivity. Each participant was given the opportunity to express more from their point of view of same-sex friendships. However, the Q-sort still required the participant to choose within a specified response range.

In a typical method of presenting a Q-sort, the participant is seated at a desk (Thomas & Watson, 2002). He or she is first introduced to a pile of cards that have been randomly shuffled for each participant. Next, she is given a grid to place the cards that have statements on each card, which range from a characteristic of "least like me" to "not like me". A Q-sort is a considered a "forced choice" procedure since the participant must place the items presented in a limited number of available spaces. The participants are required to indicate what statements are the least or the most characteristic about them. One important fact about Q-sorts is that there is no real right or wrong answer to how the items are sorted. In a typical Q methodological study, participants are shown a sample of

stimuli. These stimuli typically are displayed on 3x5 cards as picture, statements, etc. These are stacked in a randomized order. The set of statements are what is referred to as the Q-set. The participants are instructed to place the statements in rank-order that is based on their unique viewpoints. This very individualized viewpoint is derived from the respondents' judgments, preferences, or feelings on a particular subject. The statements are forced into a quasi-normal distribution. The Q-sort technique is perhaps best described as what has been coined a device that examines "operant subjectivity" (van Exel & de Graaf, 2005). Operant subjectivity is descriptive of the Q-sort since the responses are subjective. The findings will depend on the individual making a choice of where to place several items on a triangle-like grid (Stephenson, as cited in Thomas & Watson, 2002).

The stimuli that are presented in order to elicit the sorting response are what are called the "condition of instruction" (van Exel & Graaf, 2005). In other words, this would a statement or stimuli in which there could a range of responses. The participant was free to choose how to sort the items that make up what in reality make up only a fraction of a concourse. The concourse is the infinite number of statements, pictures, etc. that would be used as a response to the condition of instruction. In what is meant by an "infinite" concourse is that a concourse is theoretically an infinite number of items that would include every item that conceivably could be used. The researcher-selected statements are then placed on a "score sheet" which ranges from one extreme side of view to the other extreme with the less polarized items or "neutral" items are placed in the middle.

In this study, the Q-sort provided the researcher with a way of measuring whether there is a significant difference between male and female same-sex friendships. The results were ultimately a mirror of the participant's self-view or in other words are the

arrangements of the statements are "self-referent". To further elaborate, Q-methodology set a basis for a methodical examination of subjectivity. It looks at attitudes, beliefs; opinions, etc. (van Exel & Graaf 2005).

The operant part of Q-sort techniques is that the Q-sort generally results in measurable factor loadings. The factor loadings are clusters of subjectivity, which can be empirically analyzed (van Exel, & Graff, 2005). The factor loadings are the dependent variable. By using this approach to demonstrate same-sex friendship differences based on evolutionary support, it is important for the items to be functional in nature as opposed to being merely just seemingly proximal. The participants' points-of-view can be analyzed in an atypical way in which the "Q" correlated with the participants instead of correlating with the tests (in van Exel & Graaf, 2005). This then allows the effective use of small sample sizes and large number of test-items.

The participants were presented a set of 36 Q set items that are to be arranged by the participant in a forced item placement that flows from the least important statements to the most important statements. This will created a quasi-normal distribution consisting of "least characteristic" to "most characteristic". The proposed question or "condition of instruction" (van Exel & Graaf, 2005) was, "How much do the provided statements describe what the participant could consider to describe an ideal same-sex friend?"

The 36 Q-sort selections were statements that were selected ranged from the "least like my same-sex friend(s)" to the "most like my same-sex friend(s)". The items chosen were based on evolutionary psychology findings in past research (MacDonald, 1996). They will be given only a brief description of a generic study on ideal same-sex friendships in college until after they have completed the sorting task. To summarize, the

Q-sort technique is a less restrictive technique when compared to other "forced choice" instruments in the way the participant describes him or herself. Inventories frequently use groupings that the researcher forces onto the responses.

The explanation that follows is about how a Q-sort works from a quasi-experimental approach (van Exel & Graaf 2005). What follows to start with will be a basic description of the Q-sort technique (MacDonald, 1996). First, one must define, what is going to make up the composition of the concourse? In this study, the concourse would be every possible statement of ideal male and ideal female same-sex friendships. Next, part of the concourse is narrowing down into a Q-set consisting of several statements. Participants sort the statements of the Q-set subjectively or in other words, how it uniquely applies to them. Finally, the researcher will analyze and interpret the results of the Q-sorts statistically. If the findings show that ideal same-sex friendships are not significantly different from a similarity/reciprocity evolutionary point of view, and then there will be significant differences between how the male participants and the female participants tend to sort the items placed before them on the computer screen.

Following the path of Brown, as cited in van Exel & Graaf (2005), the selected statements of the Q-set were intended to be a strongly representative and balanced sample of the infinite concourse. These statements were chosen so that they will be different enough from one another to look at different parts of the overall ultimate differences between same-sex friendships. Besides, having items that are more discrete is more suitable for an instrument such as the Q-sort since studying just one or only a few aspects of friendship could be too limited for finding a broader perspective of same-sex closest friendship differences.

It was hypothesized that males and females have different non-kin affiliative needs. It is therefore logical to assume that there are varying needs for close same-sex friendships. This assumption especially appears to be true when considering same-sex friendship prevalence and universality. Consequently, it was proposed that there will be an examination of whether there will be differences between just the closest or ideal same-sex friendships. This is since in previous research (Benenson & Christakos, 2003) there were no significant findings when typical acquaintance-like friendships were averaged.

In this study, the researcher used a novel instrument for presenting the Q-sort technique. Instead of what can be a tedious and time-consuming task of participants sorting the cards by hand, they were presented virtual cards by a promising and unique Q-sort computer-administered program. Hackert & Braehler (2007) are the individuals who developed the program called FlashQ. The FlashQ program can be run on most computers. In this case, it was administered in a campus computer lab on a PC that uses the Windows XP operating system. After each participant was seated in front of the computer, the program was already be set up on their computer station that they chose.

FlashQ starts with a welcome screen, which includes the program authors' names, Hackert & Braehler (2007). On the next screen, the instructions for the Q-sort technique were shown to the participants. Also included on this screen were instructions for the study. The stated purpose of the study was "to gain a better understanding about how people personally view ideal friendships. Following the welcome screen on FlashQ, the next screen showed instructions about how the virtual card sorting was presented. This screen was labeled "Step 1 of 5". On the third screen, the program gave the participant an

opportunity to sort the item cards displayed on the bottom-center of the screen. Only one card was displayed at a time. Each virtual card had one of the 36 Q-set items. The virtual cards had their own individual card numbers. The computer automatically randomized the order each card was presented to the participant. Below the virtual card, it displayed the number of cards that have been sorted thus far. For example, "5/36" meant that the card that was displayed for the participant is the Q-sort's fifth with thirty-one more cards. Then below on-screen the virtual card, the participant had the opportunity to sort each card into one of three on-screen empty triangle locations by simply holding down the left mouse button and dragging the selected card over to one of the three virtual category boxes. The on-screen option boxes was labeled "least like my ideal same-sex friendship (#1)", "neutral (#2)", and "most like my ideal same-sex friendship (#3).

After completing the "triple sort", the participant saw a screen that displayed "Step 2 of 5" (Hackert & Braehler, 2007). The FlashQ program then had additional instructions for the participant. The participants were instructed both visually that they needed to drag the cards from one of the three virtual piles. These piles were displayed at the bottom of the screen into a forced sort matrix of 36 empty rectangles. The entire Q-sort "pyramid" appeared on the screen. Above the "pyramid", it had labels on the left side of the Q-sort placement object "least like my same-sex friend(s)" and the right hand corner the virtual continuum was labeled "most like my same-sex friend(s)". To complete the sorting task, all of the placement squares had to have a card dragged to each of them. The participant was free to sort the cards onto any on-screen placement square. This was even if their subsequent selection is in a different pile category than what they originally sorted when there were only three on-screen boxes. For example, they would take an item that was in

the “least like my same-sex friend(s)” and then dragging it to a square on the “most like my same-sex friend(s) side” was a goal. The previous three-option sort made it easier for the participant to categorize the items. This was not relevant to the data collected by the researcher. Finally, on the last screen there was a general demographic questionnaire.

They were instructed about there being no right or wrong answers. They were simply told that that the goal of the study was to learn more about their ideal best friends. The statement of purpose or instruction set was provided as the stimulus to respond by Q-sorting was seen on the second screen in the present experiment. The Q-sort’s Q-set was devised by providing statements regarding the differences. The Q-set was selected based on the research that either directly or indirectly supported ultimate differences between male and females same-sex friendships.

Surprisingly, a computer administered Q-sort has been used only in very few studies (e.g., Mather & Knight, 2007). Instead of only allowing the participants to sort a single word (Mather & Knight, 2007), participants could sort entire phrases (Hackert & Braehler, 2007). By using a well-designed computer program one can reduce the time and cost commitments incurred from the traditional one-on-one Q-sort method. One major advantage of FlashQ is that it could be administered to several participants in a computer room in a single sitting. On the other hand, the traditional Q-sort administration required each respondent to be presented the Q-sort separately. This technique should not only make it easier, potentially easier to analyze, but also make it much less time-consuming.

Despite the differences in the two methods of administration, since the idea behind the sorting by “ideal same-sex” preferences was the same, it was expected the psychometric properties between the traditionally administered Q-sort and the FlashQ

(Hackert & Braehler, 2007) technique would be similar. Reber, Kaufman & Cropp, as cited in van Exel & Graaf (2005), used two studies to test the reliability and validity of using computer vs. interview type Q-sorts that supported that there was not a noticeable difference in validity between the two administrative techniques. After the participants were given a debriefing sheet, they will be given a list of references in which they can obtain further information about what they participated in.

Procedure

Each participant will be assigned a computer workstation. Besides having the instructions on the computer screen, the instructions will also be read aloud to the participants. The participants will be asked to sort the Q-statements (Stephenson, as cited in Thomas & Watson, 2002) using the FlashQ (Hackert & Braehler, 2007) program based on how self-referent the items are perceived to be by the participant. The items that will be sorted by the participant from "least like my same-sex friend(s)" to "most like my same-sex friend(s)". The end of FlashQ includes a page for comments on why they selected a couple of items to be strongly true.

Participants that had similar views toward ideal same-sex friendships clustered on one of two forced factors, one with the male participants and one with the female participants. The set of data gathered would typically be entered into PQMethod which was developed by Schmolck (2002) is an easier approach than SPSS. It was devised specifically with the Q-Sort. PQMethod is an instrument that allows the researcher to analyze Q-Sort data in a much easier manner. Entering data from numerous sorts can be rather time consuming and monotonous. In addition, if there is a data entry error, typically the PQMethod will detect it. Then the researcher can make any necessary corrections. The

researcher simply enters each sort. Then unrotated factor scores are displayed. Then the researcher chose to use Varimax rotation. Then it produces rotated factor scores. Now, one can run a PCA analysis. The participants will be regarded as variables (N = 61). The set of 36 statements was used to run a principal component analysis (PCA) to limit the set of variable to just two factors. Demographic information was also gathered.

If evolutionary theory can explain why same-sex friendships are so prevalent and universal, the following will be true and will be revealed by the participant arranged Q-set of items. Those sentences that are supportive of evolutionary theory will be arranged by the participant on the appropriate side of the Q-sort. Those that are least characteristic of that sex should tend to be chosen towards "the least like my closest friendship" side. If the predicted hypothesis was supported, the factors that were forced would show significant differences in how the same-sex female group and same-sex males group. For the hypothesis to be fully supported, the female participants would have a strong tendency to characterize their same-sex friends as being analogous to the "feminine statements". Conversely, the male participants would have a significantly greater tendency to select the male analogs.

Results

The dimensionality of the 36 Q-Sort items or Q Set from the FlashQ Qsort was calculated using maximum likelihood factor analysis. The conditions of instruction were utilized to ascertain the quantity of factors to rotate an evolutionary theory drive hypothesis that the measure was two-dimensional, the scree test, and the explicability of the factor solution. The scree plot indicated that our initial hypothesis of relating to two dimensions was at least partially supported. Relying on the plot, two forced factors were

rotated using a Varimax rotation procedure. The rotated solution, revealed two forced explainable factors, females having same-sex friends best described by "feminine" analogs and males that had same-sex friends that were best described by both male and female analogs. The female analog factor explained for 37% of the Q Set variance, and the male analog factor accounted for 13% of the Q Set variance. Only one item loaded on both factors.

A two-way within-subjects analysis of variance (ANOVA) was calculated to determine the effect of male and female same-sex friendships on gender-related analogs. The dependent variable was the factor loadings of male and female analogs. The within-subjects factors were male analogs and female analogs with two levels (masculine and feminine) and time with two levels males and females. The Analog main effect and Analog X Sex interaction effect were tested utilizing the multivariate metric of Wilk's lambda. The Analog main effect was significant, Wilk's lambda = .02, $F(2,6) = 10.025$, $p = < .05$, as well as the Analog X Sex interaction effect, Wilk's lambda = .00, $F(2, 6) = 34.99$, $p = < .05$. The univariate test associated with the Analog main effect was significant, Wilk's lambda = .00, $F(1, 7) = 34.99$, $p < .05$.

Two paired-sample t tests were performed to pursue to a conclusion the significant interaction. It was controlled for the probability of make a type 1 error across these tests by using Holm's sequential Bonferroni approach. Differences in mean ratings between the two analogs were significantly different between females and males, $t(7) = -4.17$, $p < .01$, between times 2 and 3, $t(7) = -2.78$, $p = .03$, and between times 1 and 3, $t(7) = -6.62$, $p < .01$. Table 34 shows that although the difference in mean analog ratings was lower for the female analog for males, the difference decreased. These results support the hypothesis

that concentration-on-pain methods are more effective than avoidance methods the longer individuals are exposed to a stressor.

Finally, three paired-samples *t* tests were computed to assess differences between methods at each time period, controlling for the probability of making type 1 errors by utilizing Holm's sequential Bonferroni approach. At female analog, the female sex condition yielded a significantly lower mean rating, $t(7) = -4.15$, $p < .05$. At Sex 2 (Males), the two analogs were not significantly different from each other, $t(7) = -1.36$, $p < .05$, while Sex 1 (females), the female analog condition yielded a significantly lower mean rating, $t(7) = 8.41$, $p < .05$.

Discussion

The hypothesis that male and female same-sex friendships would be different based on evolutionary theory was partially supported. Female participants "chose" same-sex friends that were significantly better described by the female analog statements. This would go along the lines that female same-sex friends tended to follow a pattern of dyadic interpersonally oriented. This includes more acknowledgement, support, intimacy, longer conversations, more caring, and more volatile. Conversely, male participants' same-sex friendships did not have a significant tendency towards the female nor the male analogs. This would seem to indicate that male same-sex friendships tended to be more "balanced" between the more active/competitive type and interpersonally oriented type.

One possible limitation of this study is the Q-Sort itself. It presents the possibility that this particular set of items may have artificially limited or expanded the range across an actual sample of friendship characteristic items, hence inflating or deflating the actual findings. Friendships differ considerably, in which traits are the most prominent (see

Lansford & Parker 1999). This is compared to a standardized instrument that would have items that were tested for validity and reliability to see if they should be included in an inventory or discarded for lack of usefulness. Nevertheless, while a traditional questionnaire has its own strengths, it may be more limiting since it makes the participant conform to a preconceived idea of friendship pre-defined by the experimenter. Therefore, objective instruments also limit one to only a few choices instead of giving the participant the freedom to decide his or her own idea of a good same-sex friendship.

Another potential problem is that the Q Set did not have an adequate sampling of the evolutionary concourse. In other words, it is plausible that the male analogs may have been worded in such a way that they may have been interpreted as less socially desirable even though they may be accurate. In addition, the reverse may be true about the female analogs in which they may be considered more socially desirable. In the case of the Q-sort, people have the freedom to choose what explains their views or attitudes the most. In addition, the Q-sort Q Set was based on evolutionary theory concourse, previous evolutionary theory research and used a more experimental methodology.

Other areas of research that are needed include what are the differences in whether a friendship is characterized as “meaningful”, “good”, “ideal”, “best”, etc. How do semantics of the stimuli (question and items) affect the findings? There is always the danger of having the “statement” phrased a certain way could lead to unsound findings for what is really being investigating, whether it be a significant difference or not. Is it better for the author to define what these types of friendships mean or for the participant to define what these friendships are through an instrument such as a Q-Sort? Both of these have methods of potential pitfalls and strengths. Ultimately, it seems that the author

of any Q-Sort is practicing more of an art than a science since there are an infinite number of possibilities for the choice of the original statement and the items.

This study is different in how it used a time-tested inventory to study how same-sex friendship differences can be explained through an evolutionary standpoint. This particular study looked at an abundance of friendship characteristics so it may be worthwhile to focus on the individual traits more. “Furthermore, the current results are limited by the use of only a male researcher. A female researcher may have elicited different responses. For example, male participants may have reported more difficulties in their same-sex friendships to a male experimenter. Research consistently demonstrates that individuals of both sexes generally divulge more personal information overall to females than to males (Winstead & Griffin, 2001, as cited in Benenson & Christakos, 2003), however, suggesting that the female interviewer likely elicited more information than a male would have. Nevertheless, the inclusion of both male and female interviewers would enhance the validity of the current findings.”

“An additional generalizability limitation of the current study is the assessment of only American same-sex friendships. “ Further generalizability of the current results will require replicating the current study with individuals from more ethnically and economically diverse populations, with other age groups, and across differing cultures.”

Results cannot be generalized to close friendships with members of the opposite sex. Because mixed-sex friendships are comparatively rare, at least in the younger ages, they were not assessed. Nevertheless, outside of school and in the older grades, it is likely that a number of participants may have been involved in close mixed sex friendships. In general, mixed-sex friendships in adults have been reported to be of shorter duration than

same-sex friendships (Winstead & Griffin, 2001, as cited in Benenson & Christakos, 2003). Whether this would generalize to children and adolescents merits investigation. It would be interesting to have research into what a Q-Sort would find. In addition, the basis of evolutionary theory is that it is an overreaching or universal theory that explains the underlying cause of "adapt or die".

If mixed-sex friendships affect one sex more than the other does, this would have important implications for interpretation of the current results. For example, if more females than males participate in mixed-sex friendships, the greater fragility of same-sex friendships (Benenson & Christakos, 2003) may exert less of an impact on females than is implied by some previous findings. Future research would benefit by comparing the characteristics of same-sex versus mixed-sex friendships.

Since this study used a broad perspective (large number of differing items), perhaps research into fewer characteristics using the Q-Sort may be more parsimonious. Since the best theory is usually the most parsimonious, this could help. However, friendships are complex by their very nature. Those friendships of males and females are different primarily because of evolutionary "drives". It would also be interesting to study these differences using other instruments to validate the findings of this study. Since this was limited to college students, and since evolutionary theory is based on universality, it would be timely to study different age groups, socioeconomic groups, and other nationalities.

One such demographic group that needs future study are same-sex friendships among gay men and lesbians. It is logical to predict that gay males and lesbians would react to the same sex similar to how cross sex interactions. This would be especially

timely since almost 20% of participants' sexual orientation were either gay male, lesbian, bi-sexual, uncertain, or simply declined to answer. This is based on the possibility of a similarity towards biological similarities of gay men and lesbians to the opposite sex. Does that mean the opposite sex would feel "less threatened" or feel less "sexual tension" than platonic cross-sex friendships? One obstacle of studying people of a homosexual sexual orientation is that there is little theory about what would be the ultimate cause behind a homosexual orientation. To complicate matters further, where does one draw the line between bisexual men and women and those who are strictly gay men and lesbians? It may turn out that when it comes to friendships, regardless of sexual orientation, people respond in a similar and adaptive way.

Despite the limitations of the current study, the findings are consistent with a number of prior studies that have examined sex differences in the duration of close same-sex friendships. Not only are the close same-sex friendships of females shorter than those of males, but additional measures indicate that they are more fragile in general (Benenson & Christakos, 2003). Understanding the reasons behind sex difference necessitates will improve knowledge of the functions of the female same-sex relationship.

References

Ainsworth, M. D. (1989). Attachments beyond infancy. *American Psychologist, 44,* 709-716.

Archer, J. (1996). The differences in social behavior: Are the social role and evolutionary explanations compatible? *American Psychologist, 51,* 909-917.

Atkinson, J.R. (1992). QMethod (Version 1.0) [Computer software]. Kent, OH: Computer Center, Kent State University.

Bank, B. J. & Hansford, S. L. (2000). Gender and friendship: Why are men's best same-sex friendships less intimate and supportive? *Personal Relationships, 7,* 63-78.

Baumeister, R. F., & Leary, M. R. (1995).The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117, 497-529.*

Benenson, J. F. & Christakos. (2003). The greater fragility of females' versus males' closest same-sex friendships. *Child Development,* 74, 1123-1129.

Berndt (2002) Friendship Quality and Social Development Current Directions in *Psychological Science, 11,* 7–10.

Berzeczkei, T. (2000). Evolutionary psychology: A new perspective in the behavioral sciences. *European Psychologist,* 5, 175-190.

Bleske-Rechek, A. L. & Buss, D. M. (2001). Opposite-sex friendship: Sex differences and similarities in initiation, selection, and dissolution. *Personality and Social Psychology Bulletin, 27,* 1310-1323.

Bourgeois, M. J. & Perkins, J. (2003). A test of evolutionary and sociocultural explanations of reactions to sexual harassment. *Sex Roles,* 49, 343-351.

Brown, R. (1993). A primer on Q-methodology. *Operant Subjectivity,* 16, 91-138.

Buhrmester, D., & Furman, W. (1987). The development of companionship and intimacy. *Child Development, 58,* 1101-1113.

Buss, D. M. (2000). The evolution of happiness. *American Psychologist,* 55, 15-23.

Buss, D. M. (2001). Cognitive biases and emotional wisdom in the evolution of conflict between the sexes. *Current Directions in Psychological Sciences, 10,* 219-223.

Buss, D. M. & Reeve, H., K. (2003). Evolutionary Psychology and Developmental Dynamics: Comment on Lickliter and Honeycutt. *Psychological Bulletin,*

129, 848–853.

Caldwell, M. A., & Peplau, L. A. (1982). Sex differences in same-sex friendship. *Sex Roles, 8*, 721-732.

Clark, M.S. (1984). Record keeping in two types of relationships. *Journal of Personality And Social Psychology, 47*, p. 549-557.

Cosmides, L. (1985). Deduction or Darwinian Algorithms? An explanation of the "elusive" content effect on the Wason selection task. Doctoral dissertation, Harvard University. *University Microfilms #86*-02206.

Cosmides, L. & Tooby, J. (1987). "From evolution to behavior, Evolutionary Psychology as the missing link." The Latest on the best; essays on evolution and optimality. Cambridge, Mass. MIT press.

Cosmides, L. & Tooby, J. (1997). Evolutionary Psychology: A Primer. Retrieved on April 4, 2008. http://www.psych.ucsb.edu/research/cep/primer.html.

Deci, E.L., & Ryan, R.M. (2000). The ''what'' and ''why'' of goal pursuits: Human needs and the self determination of behavior. *Psychological Inquiry, 11*, 227–268.

Diener, E. & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well -being. *Psychological Science in the Public Interest, 5*, 1-31.

Dugatkin, L. A. (1997). The evolution of cooperation. *Bioscience, 47 (6), Retrieved December 4,2008,* from Academic Search Database.

Elkins, L. E. & Peterson, C. (1993). Gender differences in best friendships. *Sex Roles, 29*, 497-508.

Fehr, B. (2004). Intimacy expectations in same-sex friendships: A prototype Interaction pattern model. *Journal of Personality and Social Psychology, 86,* 265-284.

Frederickson, B. & Knight. M. (n. d.). FANOVA: A Q-Methodological Paradigm. Unpublished manuscript.

Geary, D. C. & Flinn, M. V. (2002). Sex differences in behavioral and hormonal response to social threat: Commentary on Taylor et al. (2000). *Psychological Review*, 109, 745-750.

George, T. P. & Hartmann, D. P. (1996). Friendship networks of unpopular, average, and popular children. *Child Development, 67,* 2301-2316.

Goodson (2003). The Evolution and Function of Cognition. Lawrence Earlbaum

Associates, Inc.
Hackert, C. & Braehler, G. Flash Q. (2007). Accessed on February 23, 2008 at http://www.hackert.biz/flashq/demo/ http://www.hackert.biz/flashq/disclaimer/

Hawks, J., Wang, E. T., Cochran, G. M., Harpending, H. C., & Moyzis, R. K. (2007). Recent acceleration of human adaptive evolution. *Proceedings of the National Academy of Sciences, 104*: 20753-20758.

Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review, 19,* 97–132.

Jones, D. (1999). Evolutionary psychology. *Annual Review of Anthropology, 28,* 553-575.

Kruger, D. J. (2001). Psychological aspects of adaptations for kin directed altruistic helping behaviors. Social Behavior and Personality, 29, 323-33.

Kuttler, A. F., La Greca, A. M. Prinstein, M. J. (1999). Friendship qualities and social -emotional functioning of adolescents with close, cross sex friendships. *Journal of Research on Adolescence, 9,* 1050-8392.

Lansford, J. E., & Parker, J. G. (1999). Children's interactions in triads: Behavioral profiles and effects of gender and patterns of friendships among members. *Developmental Psychology,* 35, 80-93.

Lever, J. (1978). Sex differences in the complexity of children's play and games. *American Sociological Review, 43,* 471–483.

Low, B. S. (1989). Cross-cultural patterns in the training of children: An evolutionary perspective. *Journal of Comparative Psychology, 103,* 313–319.

Lusk, J., MacDonald, K. & Newman, J. (1998). Resources appraisals among self, friend and leader: Implications for an evolutionary perspective on individual differences. *Personality and Individual Differences, 24,* 685-700.

Maccoby, E. E. (1988). Gender as a social category. *Developmental Psychology, 26,* 755-765.

Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist, 45,* 513-520.

MacDonald, K.B. (1992a). Warmth as a developmental construct: An evolutionary analysis. *Child Development, 63,* 753–773.

MacDonald (1996). What do children want? A conceptualization of evolutionary influences on children's motivation in the peer group. *International Journal of*

Behavioral Development, 19, 53-73.

MacDonald, K. (1998) 'Evolution and development', in A. Campbell and S. Muncer (eds), The Social Child, Hove: Psychology Press, pp. 165–83.

Mather, R. D. & Knight, M. (2007). Human mate preferences: Empirical validation of dual sexual strategies. Journal of Scientific Psychology, 32-34.

Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29,* 611–621.

Publication Manual of the American Psychological Association (5th edition). (2001). New York, American Psychological Association.

Reis, H. T., Senchak, & Soloman, B. (1985). Sex differences in the intimacy of social interaction: Further examination of potential explanations. *Journal of Personality and Social Psychology*, 48, 1204-1217.

Reisman, J. (1990). Intimacy in same-sex friendships. *Sex Roles, 23,* 65-82.

Russell, R., & Tyler, M. (2002). Thank heaven for little girls: Girl Heaven and the commercial context of feminine childhood. *Sociology,* 36, 619–637.

Schmolck, P. (2008). The QMethod Page. Retrieved November28, 2008, from http://www.lrz-muenchen.de/~schmolck/qmethod/#PQMethod.

Seligman, M.E.P. (2002). Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment. New York: Free Press/Simon and Schuster.

Shirley, J. and Campbell, A. (2000). Same-sex preference in infancy: Visual preference for sex-congruent stimuli at three months. Psychology, Evolution & Gender, 2.1, 3-18.

Silk, J. B. (2002). Using the 'f' word in primatology. Behavior, 139, 421-446.

Thomas, D, M. & Watson, R. T. (2002). Q-Sorting and MIS research: A primer. Communications of the Association for Information Systems, 8, 141-156.

Tooby, J. & Cosmides, L. (1996*).* Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. *Proceedings of the British Academy,* 88, 119-143.

Tooby, J. & Cosmides, L. (2005). Evolutionary psychology: Conceptual foundations.

Retrieved March 10, 2008, from http://www.cbd.ucla.edu/downloads/concept-j16.pdf.

Trapnell, P. D., & Wiggins, J. S., (1996). Extension of the interpersonal adjective scales to include the big five dimensions of personality. *Journal of Personality and Social Psychology, 59,* 781-790.

Trivers (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology,* 46, 35-57.

MacDonald, K. (1996). What do children want? An evolutionary perspective on peer relationships in childhood. *International Journal of Behavioral Development, 19,* 53–73.

MacDonald, K. (1998). Evolution and development. *The Social Child*. East Sussex, UK, Psychology Press.

van Exel, J. & Graaf, G. G. (2005). Q methodology: A sneak preview. Retrieved April 11, 2008, from website www.jobvanexel.nl.

Wright, P. H. (1982). Men's friendships, women's friendships, and the alleged inferiority of the latter. *Sex Roles, 8,* 1-20.

Wright, P. H., & Scanlon, M. B. (1991). Gender role orientations and friendship: some attenuation, but gender differences abound. *Sex Roles, 24,* 551-566.

Zarbatany, L., Conley, R., & Pepper, S. (2004). Personality and gender differences in friendship needs and experiences in preadolescence and you adulthood. *International Journal Of Behavioral Development, 28,* 299-310.

Appendix A

Demographic Information

1. Participant ID

2. Age
   Please select your age category.
   1. 18-25
   2. 26-35
   3. 36-40;
   4. 40+
   5. decline to answer

3. Gender
   Please select your gender.
   1. Female;
   2. Male;
   3. decline to answer

4. Ethnicity
   Which ancestral ethnicity/culture do you most identify?
   1. European/Russian;
   2. African; Hispanic/Latino;
   3. Middle-East Asian; Far East/ South East Asian;
   4. Native American/American Indian/Indigenous;
   5. Hawaiian/Pacific Islander; Other;
   6. decline to answer

5. Classification
   Please select your classification.
   1. Freshman;
   2. Sophomore;
   3. Junior;
   4. Senior;
   5. Other;
   6. decline to answer

6. Marital Status
   Please select your marital status.
   1. Single;
   2. Married;
   3. Divorced;
   4. Widowed;
   5. Other;
   6. decline to answer

7. Sexual Orientation
   Please select your sexual orientation.
   1. Heterosexual;
   2. Bi-Sexual;
   3. Gay Male or Lesbian;
   4. Not Sure;
   5. decline to answer

8. Same-Sex friendship
   Do you currently have a same-sex friend?
   1. Yes;
   2. No;
   3. decline to answer

9. Quantity of Same-Sex friends over a lifetime.
   How many same-sex friends have you had over your lifetime?
   1. 1-3;
   2. 4-5;
   3. 5-10;
   4. 11+;
   5. decline to answer

10. Duration of same-sex friendship
    1. How long have your same-sex friendships tend to last?
    2. never had one; less than 1 year; about 1 year; more than 1 year; more than 5 years; decline to answer

11. Cross-Sex Friendship
    1. Do you currently have a cross-sex friend?
    2. Yes;
    3. No;
    4. decline to answer

12. Quantity of cross-sex friendships over lifetime
    How many cross-sex friendships have your had during your lifetime?
    1. 1-5;
    2. 6-10;
    3. 10+;
    4. decline to answer

13. Duration of cross-sex friendships
    How long do your cross-sex friendships tend to last?
    1. never had one;
    2. less than 1 year;
    3. about 1 year;

4. more than 1 year;
5. more than 5 years;
6. decline to answer

14. Friendship type preference

What type of friendship do you prefer?

1. same-sex;
2. opposite-sex;
3. about the same

Appendix B

Research Based Evolutionary Same-Sex Predictions

Predicted to be chosen by female participants:

Relatives over friends
Dyad over group
Provide Protection
Friendship duration per meeting
Assist friend with childcare
Co-Ruminating
Cooperation over competing
Friendship volatility
Openness/closeness
Emotionally open without feeling threatened
Caring & supportive
"*Female*" *conversation* – longer in duration & frequency
Interpersonally oriented
Acknowledgement & agreement

Predicted to be picked by male participants

Team/alliance oriented
Competitive
Active/activities
Behaviorally uninhibited
Ambition
Networking
Emotional inhibition
Alliance building and maintaining
Male Conversations – activities, talk, work, car & sports
Active/competitive behaviors

Appendix C

ANALOGS

FEMALE ANALOGS

1. I prefer to spend time with my relatives more than with my same-sex friendship(s).
2. My same-sex friend(s) and I spend more time together than we do in a same-sex group of friend(s) s.
3. My same-sex friend(s) and I discuss personal issues more than we discuss sports, our accomplishments, and politics.
4. My same-sex friend(s) protects me from danger.
5. My same-sex friend(s) and I spend a considerable amount of time together.
6. I don't mind helping my same-sex friend(s) with occasionally taking care of her/his child.
7. My same-sex friend(s) and I are more cooperative than competitive.
8. My same-sex friend(s) and I find it challenging to solve our arguments and misunderstandings.
9. My same-sex friendships usually are emotionally intense, dramatic and don't last very long.
10. My same-sex friend(s) and I prefer to be cautious and not attract a lot of attention to ourselves.
11. My same-sex friend(s) and I share a strong emotional bond.
12. My same-sex friend(s) and I face each other when we talk rather than face more to the side.
13. My same-sex friend(s) and I feel comfortable talking about our deepest secrets, dreams, and thoughts.
14. My same-sex friend(s) and I are emotionally open to each other without feeling uncomfortable or awkward.
15. My same-sex friend(s) and I are open about what is bothering us in our relationships with our friend(s)s, family, and significant other.
16. My same-sex friend(s) and I have many long conversations.
17. My same-sex friend(s) and I like to talk about topics that are mainly about our personal relationships.
18. My same-sex friend(s) and I usually listen, agree, and acknowledge what the other person said.

MALE ANALOGS

19. My same-sex friend(s) and i prefer to be on a team or alliance to work together against our competitors.
20. My same-sex friend(s) and I compete more than we cooperate.
21. My same-sex friend(s) and I are tend to prefer to brag about ourselves with more than being caring and supportive.
22. When my same-sex friend(s) and I talk, the conversations are generally short, to the point, and infrequent.
23. My same-sex friend(s) helps me be more successful by providing more contacts so I can beat the competition.
24. I prefer to keep a comfortable emotional distance from my same-sex friend(s).
25. My same-sex friend(s) and I like to take risks and show off.
26. My same-sex friend(s) and I like talking about sports, work, cars, and other similar activities.
27. When we talk, my same-sex friend(s) and I usually face each other to the side more than we face each other.
28. My same-sex friend(s) and I participate in a same-sex group competitive activities more than we talk about relationships.
29. I have more fun with a group of same-sex friends than a same-sex friend(s).
30. My same-sex friend(s) and I mainly talk about work, cars, and sports rather than our feelings.
31. My same-sex friend(s) and I enjoy participating in activities.
32. My same-sex friend(s) and I would rather participate in activities with many same-sex friends more than doing things with just my same-sex friend(s).
33. I prefer to spend time with several same-sex friend(s)s instead of just one same-sex friend(s).
34. My same-sex friend(s) and I compete more than work together on things.
35. My same-sex friend(s) and I would rather go out and do things than talk about our relationships with our friend(s)s, family, and significant other.
36. My same-sex friend(s) and I are not interested in talking about our feelings.

Appendix D

Consent Form